Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

21. (Amended) A solder bump structure for use on a substrate, comprising:
    (a) a multilayer underbump metallization having a major upper surface with a solder wetable caplayer for contacting a solder bump, the mutilayer underbump metallization projecting from said substrate with a sidewall; and
    (b) a ~~thin~~ layer of ~~a~~ metal selected from a group consisting of titanium, chrome, a titanium-nickel-titanium composite, a titanium-nickel-chrome composite, a titanium-platinum-titanium ~~alloy~~ composite, and a titanium-nickel-oxidized silicon composite deposited over or under said multilayer underbump metallization and ~~adjacent to~~ covering the sidewall of said multilayer underbump metallization~~; and~~
~~(c) a solder bump on top of said underbump metallization.~~

22. (Amended) The solder bump structure according to Claim 21, wherein said solder bump is applied onto said ~~thin~~ layer of ~~said~~ metal.

23. (Original) The solder bump structure according to Claim 21, wherein said substrate is fabricated from materials selected from a group consisting essentially of X and Y-Z, where X is an element selected from a group consisting of elements of Period IV of Periodic Table, Y is an element selected from a group consisting of elements of Period III of Periodic Table, and Z is an element selected from a group consisting of elements of Period V of Periodic Table.

24. (Original) The solder bump structure according to Claim 21, wherein said multilayer underbump metallization further comprises:
    (a) a layer of titanium with a thickness within a range of between about

0.02 and about 0.05 micrometers;
(b) a layer of nickel with a thickness within a range of between about 0.5 and about 1.0 micrometers onto said layer of titanium; and
(c) a layer of gold with a thickness within a range of between about 0.05 and about 0.2 micrometers onto said layer of nickel.

25. (Amended) The solder bump structure according to Claim 21, wherein said ~~thin~~ layer of ~~the~~ metal has a thickness within a range of between about 200 and about 1,000 Angstroms.

26. (Original) The solder bump structure according to Claim 21, wherein said solder bump comprises an alloy of tin and lead.

27. (Original) The solder bump structure according to Claim 21, further comprising an insulating film arranged under said multilayer underbump metallization, wherein said insulating film comprises silicon nitride and polyimide.

28. (Original) The solder bump structure according to Claim 21, further comprising a sealant feature arranged under said multilayer underbump metallization.

29. (Amended) The solder bump structure according to Claim ~~21~~ 28, further comprising said insulating film arranged under said multilayer underbump metallization and said sealant feature arranged between said multilayer underbump metallization and said insulating film.

30. (Original) The solder bump structure according to Claim 28, wherein said sealant feature is made of titanium.

31. (Original) The solder bump structure according to Claim 28, wherein said sealant feature has a thickness between about 0.02 and 0.20 micrometers.

32. (New) A solder bump structure for use on a substrate, comprising:

(a) a multilayer underbump metallization;

(b) a layer of metal selected from a group consisting of titanium, chrome, a titanium-nickel-titanium composite, a titanium-nickel-chrome composite, a titanium-platinum-titanium alloy, and a titanium-nickel-oxidized silicon composite deposited over or under said multilayer underbump metallization and adjacent to said multilayer underbump metallization;

(c) a solder bump on top of said underbump metallization; and

(d) a sealant feature arranged under said multilayer underbump metallization,

wherein the layer of metal and the sealant feature both extend outwardly beyond an edge or periphery of the multilayer underbump metallization.

33. (New) The solder bump structure according to Claim 32, further comprising said insulating film arranged under said multilayer underbump metallization and said sealant feature arranged between said multilayer underbump metallization and said insulating film.

34. (New) The solder bump structure according to Claim 31, wherein said sealant feature is made of titanium.

35. (New) The solder bump structure according to Claim 31, wherein said sealant feature has a thickness between about 0.02 and 0.20 micrometers.

36. (New) The solder bump structure according to Claim 31 wherein the sealant feature is in contact with the layer of metal.

37. (New) The solder bump structure according to Claim 31 wherein the sealant feature has ring or annular shape.

38. (New) The solder bump structure according to Claim 37 wherein the

sealant feature is in contact with the layer of metal

39. (New) A solder bump structure for use on a substrate, comprising:

(a) a multilayer underbump metallization;

(b) a plating membrane and non-wettable dam comprising a metal layer selected from a group consisting of chrome, a titanium-nickel-titanium composite, a titanium-nickel-chrome composite, a titanium-platinum-titanium composite, and a titanium-nickel-oxidized silicon composite deposited under and in contact with said multilayer underbump metallization and extending outwardly beyond a peripheral edge of said multilayer underbump metallization; and

(c) a solder bump on top of said underbump metallization.

40. (New) A solder bump structure for use on a substrate as claimed in claim 39 wherein the plating membrane extends at least partially under the multilayer underbump metallization.